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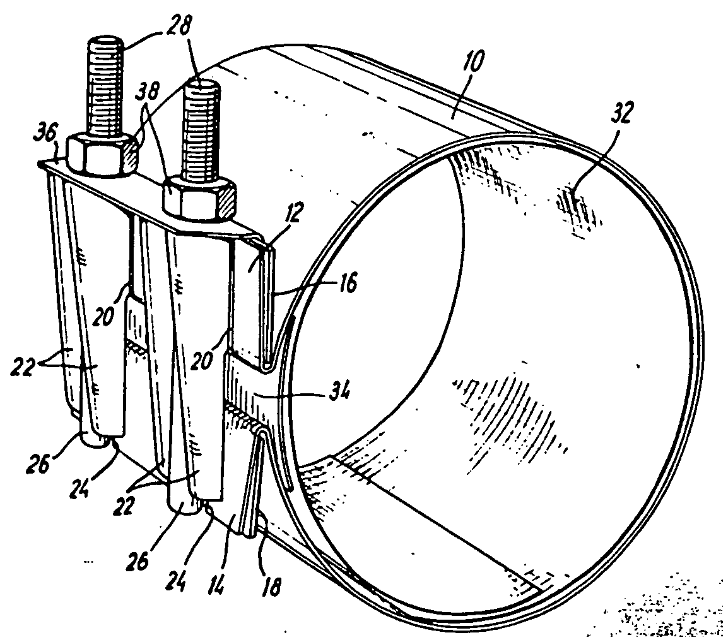
(54) Pipe repair clamp

(57) A pipe repair clamp which does not require extensive welding of the parts and which will not "unwind" on tightening includes a flexible metal strap (10) shaped in the form of a cylinder. The ends (12, 14) of the strap are reversed and welded to thrust plates (16, 18). Slots (20, 24) in the reversed ends of the strap allow lugs (22) and studs (26) for tightening the strap to be welded directly to the thrust plates.



The drawing originally filed was informal and the print here reproduced is taken from a later filed formal copy.

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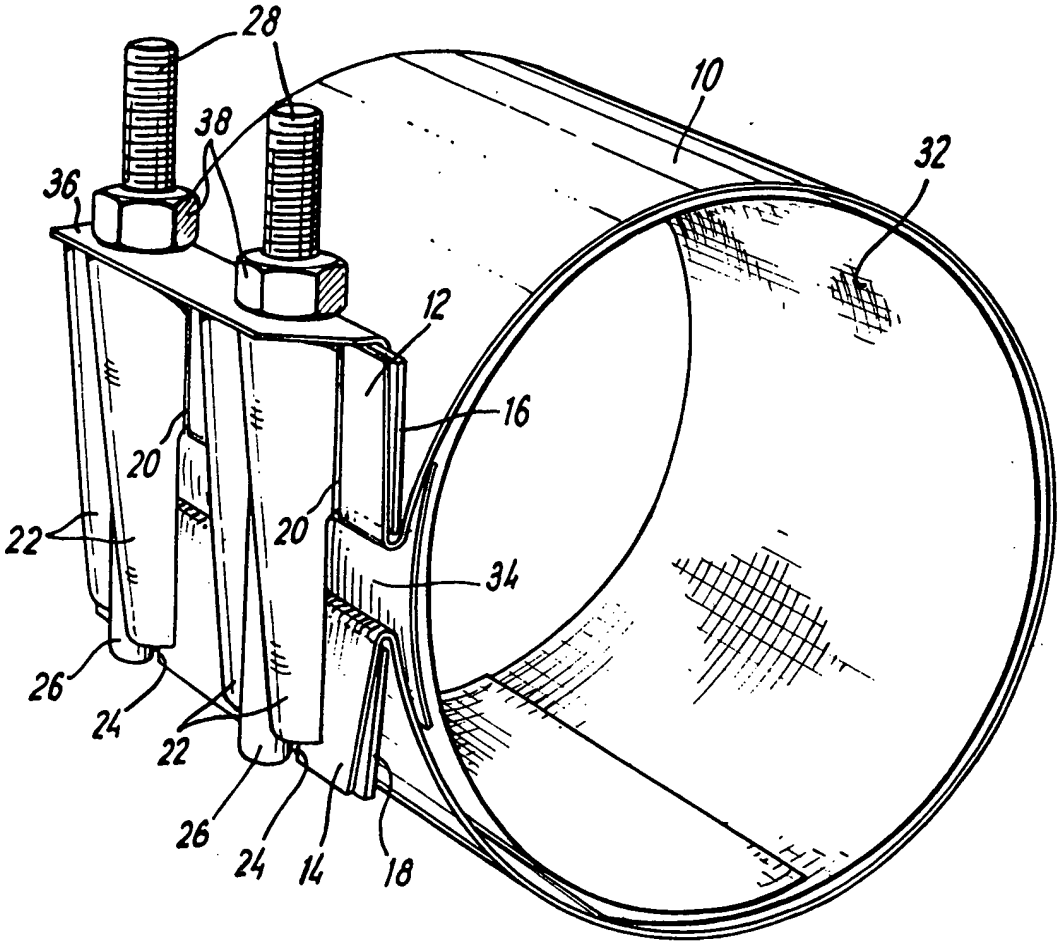

SPECIFICATION

Pipe repair clamp

This invention relates to a pipe repair clamp.

Pipe repair clamps normally comprise a flexible metal strap formed into a hollow open ended generally cylindrical shaped lined with a gasket of resilient material. Means comprising bolts is provided at the ends of the strap by which the strap can be tightened on a pipe.

There are various ways by which the bolt means are attached to the free ends of the metal strap but they all have disadvantages of one kind or another. For example one clamp has a rectangular metal plate welded along one edge to the free edge of the metal strap. Such welds are time consuming and expensive to produce. Moreover the weld is located at the place where the clamping pressure is transmitted, upon tightening the bolts, to the metal straps and that is undesirable, causing high stress to welded material.

In a different arrangement each free end of the strap is reversed outwardly and received in a U-shaped metal plate to which the bolts are attached. The strap end and metal plate are then spot welded together. Although this overcomes the problem of extensive welding it introduces another disadvantage in that there is a tendency for the assembly to 'unwind', that is to say upon tightening the bolts there may be some deformation of the reversed ends of the strap and hence the effectiveness of the clamp is impaired.

The present invention has been made from a consideration of the above mentioned problems.

According to the invention there is provided a pipe repair clamp comprising a flexible strap shaped to form an open-ended, hollow, generally cylindrical body, the ends of said straps being reversed outwardly so as to project away from each other, a thrust plate disposed between each reversed end and the cylindrical body, there being apertures in each said reversed end and clamp tightening means directly connected to said thrust plates through said apertures.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawing which shows a pipe clamp in perspective.

Referring to the drawing the pipe clamp comprises a flexible strap 10 preferably of metal such as stainless steel. The strap is shaped as illustrated to form a hollow, open ended cylindrical body. The end portions 12, 14 of the strap are out-turned so that end portion 12 is directed away from end portion 14 and so that both end portions lie in a plane generally tangential to the cylinder.

A rigid thrust plate 16, 18 is spot welded to each end portion 12, 14 respectively on the side thereof adjacent the cylinder body. A series of slots 20 are formed in end portion 12, so that a corresponding number of lugs 22 can be welded directly onto the thrust plate 16. As can be seen in the drawing the lugs 22 are arranged generally parallel to each other and extend over the gap between end portions 12 and 14 to terminate near the free end of end portion 14. In the embodiment shown in the drawing there are four lugs 22 arranged in two pairs. Slots 24 are formed in end portion 14 in register with each pair of lugs and a stud 26 is welded to thrust plate 18 through said slots 24 so as to extend between the lugs. The free ends 28 of studs 26 are threaded and extend well beyond end portion 12.

In use a gasket 32 which is advantageously of the kind described in our British Patent Specification No. 1290669 is located inside the strap which is fitted around a pipe to be repaired, a curved plate 34 being placed across the gap between end portions 12, 14.

A plate 36 is fitted over the ends of the studs 26 to bear against the ends of lugs 22 and the clamp is tightened onto the pipe by tightening nuts 38 on the studs. The plate 36 is formed with a return which clips over the back of the thrust plate 16.

It will be understood that the invention is not restricted to the above described embodiment and that many variations can be made. For example the number of studs can be increased with a corresponding increase in the number of lugs. In another variant lugs are connected to both thrust plates and a through bolt used for tightening the clamp.

CLAIMS

1. A pipe repair clamp comprising a flexible strap shaped to form an open-ended, hollow, generally cylindrical body, the ends of said straps being reversed outwardly so as to project away from each other, a thrust plate disposed between each reversed end and the cylindrical body, there being apertures in each said reversed end, and clamp tightening means directly connected to said thrust plates through said apertures.

2. A pipe repair clamp as claimed in Claim 1, wherein the out-turned end portions lie in a plane substantially tangential to the cylindrical body.

3. A pipe repair clamp as claimed in Claim 1 or Claim 2, wherein each thrust plate is secured to the adjacent end portion of the flexible strap.

4. A pipe repair clamp as claimed in any preceding claim, wherein the clamp tightening means comprises a plurality of lugs secured to one thrust plate and extending over the other thrust plate, a plurality of studs fixed to the other thrust plate and extending over said one thrust plate and means threadedly engaged with said studs adapted to bear on said studs for urging the ends of the flexible strap towards each other.

5. A pipe repair clamp as claimed in Claim 4, wherein the lugs are arranged to extend on either side of each stud.

6. A pipe repair clamp as claimed in any

preceding claim, wherein a gasket is provided inside the cylindrical body.

7. A pipe repair clamp substantially as described herein with reference to the accompanying drawing.

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